

fischer^{11,40}

$$\begin{aligned}
& \text{fischer}\{\$x:\text{ut}2, \\
& \quad \$\text{try}:\text{ut}2, \\
& \quad \$\text{taken}:\text{ut}2, \\
& \quad \$\text{contending}:\text{ut}2, \\
& \quad \$\text{free}:\text{ut}2, \\
& \quad \$\text{mine}:\text{ut}2, \\
& \quad \$\text{wanted}:\text{ut}2, \\
& \quad \$z:\text{ut}2\} \\
& (es; L) \\
\equiv_{\text{def}} & \forall e:\text{es-}\mathbb{E}(es). \\
& (\text{loc}(e) \in L) \\
\Rightarrow & (\text{es-dtype}(es; \text{loc}(e); \text{mkid}\{\$x:\text{ut}2\}; \text{Id}) \\
& \quad c \wedge (((\text{es-after}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$free:\text{ut}2\}) \\
& \quad \vee (\text{es-after}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$taken:\text{ut}2\}) \\
& \quad \vee (\text{es-after}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$mine:\text{ut}2\}) \\
& \quad \vee (\text{es-after}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$try:\text{ut}2\}) \\
& \quad \vee (\text{es-after}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$contending:\text{ut}2\}))) \\
& \quad \wedge (\text{es-initially}(es; \text{loc}(e); \text{mkid}\{\$x:\text{ut}2\}) = \text{mkid}\{\$free:\text{ut}2\}) \\
& \quad \wedge (@e(\text{mkid}\{\$x:\text{ut}2\} \rightarrow \text{mkid}\{\$try:\text{ut}2\}) \\
& \quad \Rightarrow (((\text{es-when}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$free:\text{ut}2\}) \\
& \quad \vee (\text{es-when}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$contending:\text{ut}2\}))) \\
& \quad \wedge \text{L.all}(L; \\
& \quad \quad \text{Id}; \\
& \quad \quad i.((\neg(i = \text{loc}(e))) \\
& \quad \quad \Rightarrow (e \text{ sends on } \langle \text{loc}(e) \\
& \quad \quad \quad , i \\
& \quad \quad \quad , \text{mkid}\{\$z:\text{ut}2\} \rangle \text{ with tag } \text{mkid}\{\$wanted:\text{ut}2\})))))) \\
& \quad \wedge (@e(\text{mkid}\{\$x:\text{ut}2\} \rightarrow \text{mkid}\{\$mine:\text{ut}2\}) \\
& \quad \Rightarrow (\text{es-when}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$try:\text{ut}2\})) \\
& \quad \wedge (@e(\text{mkid}\{\$x:\text{ut}2\} \rightarrow \text{mkid}\{\$free:\text{ut}2\}) \\
& \quad \Leftrightarrow (((\text{es-when}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$taken:\text{ut}2\}) \\
& \quad \wedge ((\uparrow \text{es-isrcv}(es; e)) \\
& \quad \quad c \wedge ((\text{es-tag}(es; e) = \text{mkid}\{\$free:\text{ut}2\}) \\
& \quad \quad \wedge (\exists i:\text{Id} \\
& \quad \quad \quad ((i \in L) \\
& \quad \quad \quad \wedge (\neg(i = \text{loc}(e))) \\
& \quad \quad \quad \wedge (\text{es-lnk}(es; e) = \langle i, \text{loc}(e), \text{mkid}\{\$z:\text{ut}2\} \rangle)))))) \\
& \quad \vee ((\text{es-when}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$mine:\text{ut}2\}) \\
& \quad \wedge \text{L.all}(L; \\
& \quad \quad \text{Id}; \\
& \quad \quad i.((\neg(i = \text{loc}(e))) \\
& \quad \quad \Rightarrow (e \text{ sends on } \langle \text{loc}(e)
\end{aligned}$$

$$\begin{aligned}
& , i \\
& , \text{mkid}\{\$z:\text{ut}2\}\rangle \text{ with tag } \text{mkid}\{\$free:\text{ut}2\}\rangle\rangle\rangle\rangle) \\
\wedge (\text{@}e(\text{mkid}\{\$x:\text{ut}2\}\rightarrow\text{mkid}\{\$contending:\text{ut}2\}) \\
\iff ((\text{es-when}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$try:\text{ut}2\}) \\
\wedge ((\uparrow\text{es-isrcv}(es; e) \\
c\wedge ((\text{es-tag}(es; e) = \text{mkid}\{\$wanted:\text{ut}2\}) \\
\wedge (\exists i:\text{Id} \\
((i \in L) \\
\wedge (\neg(i = \text{loc}(e))) \\
\wedge (\text{es-lnk}(es; e) = \langle i, \text{loc}(e), \text{mkid}\{\$z:\text{ut}2\}\rangle)))))) \\
\wedge (\text{@}e(\text{mkid}\{\$x:\text{ut}2\}\rightarrow\text{mkid}\{\$taken:\text{ut}2\}) \\
\Rightarrow (((\text{es-when}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$contending:\text{ut}2\}) \\
\vee (\text{es-when}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$free:\text{ut}2\})) \\
\wedge ((\uparrow\text{es-isrcv}(es; e) \\
c\wedge ((\text{es-tag}(es; e) = \text{mkid}\{\$wanted:\text{ut}2\}) \\
\wedge (\exists i:\text{Id} \\
((i \in L) \\
\wedge (\neg(i = \text{loc}(e))) \\
\wedge (\text{es-lnk}(es; e) = \langle i, \text{loc}(e), \text{mkid}\{\$z:\text{ut}2\}\rangle)))))) \\
\wedge ((\uparrow\text{es-isrcv}(es; e) \\
\Rightarrow (\text{es-tag}(es; e) = \text{mkid}\{\$free:\text{ut}2\}) \\
\Rightarrow (\exists i:\text{Id} \\
((i \in L) \\
\wedge (\neg(i = \text{loc}(e))) \\
\wedge (\text{es-lnk}(es; e) = \langle i, \text{loc}(e), \text{mkid}\{\$z:\text{ut}2\}\rangle))) \\
\Rightarrow (\text{subtype_rel}(\text{es-vartype}(es; \text{loc}(\text{es-sender}(es; e))); \text{mkid}\{\$x:\text{ut}2\}); \text{Id}) \\
c\wedge (\text{@es-sender}(es; e)(\text{mkid}\{\$x:\text{ut}2\}\rightarrow\text{mkid}\{\$free:\text{ut}2\}) \\
\wedge (\text{es-when}(es; \text{mkid}\{\$x:\text{ut}2\}; \text{es-sender}(es; e)) = \text{mkid}\{\$mine:\text{ut}2\})))))) \\
\wedge ((\uparrow\text{es-isrcv}(es; e) \\
\Rightarrow (\text{es-tag}(es; e) = \text{mkid}\{\$wanted:\text{ut}2\}) \\
\Rightarrow (\exists i:\text{Id} \\
((i \in L) \\
\wedge (\neg(i = \text{loc}(e))) \\
\wedge (\text{es-lnk}(es; e) = \langle i, \text{loc}(e), \text{mkid}\{\$z:\text{ut}2\}\rangle))) \\
\Rightarrow (\text{subtype_rel}(\text{es-vartype}(es; \text{loc}(\text{es-sender}(es; e))); \text{mkid}\{\$x:\text{ut}2\}); \text{Id}) \\
c\wedge \text{@es-sender}(es; e)(\text{mkid}\{\$x:\text{ut}2\}\rightarrow\text{mkid}\{\$try:\text{ut}2\}))))))
\end{aligned}$$

clarification:

fischer{\\$x:ut2,
\\$try:ut2,
\\$taken:ut2,
\\$contending:ut2,
\\$free:ut2,
\\$mine:ut2,
\\$wanted:ut2,

$$\begin{aligned}
& \text{\$z:ut2} \\
& (es; L) \\
\equiv_{\text{def}} & \forall e: \text{es-E}(es). \\
& (\text{es-loc}(es; e) \in L \in \text{Id}) \\
& \Rightarrow (\text{es-dtype}(es; \text{es-loc}(es; e); \text{mkid}\{\text{\$x:ut2}\}; \text{Id}) \\
& \quad c \wedge (((\text{es-after}(es; \text{mkid}\{\text{\$x:ut2}\}; e) = \text{mkid}\{\text{\$free:ut2}\} \in \text{Id}) \\
& \quad \vee (\text{es-after}(es; \text{mkid}\{\text{\$x:ut2}\}; e) = \text{mkid}\{\text{\$taken:ut2}\} \in \text{Id}) \\
& \quad \vee (\text{es-after}(es; \text{mkid}\{\text{\$x:ut2}\}; e) = \text{mkid}\{\text{\$mine:ut2}\} \in \text{Id}) \\
& \quad \vee (\text{es-after}(es; \text{mkid}\{\text{\$x:ut2}\}; e) = \text{mkid}\{\text{\$try:ut2}\} \in \text{Id}) \\
& \quad \vee (\text{es-after}(es; \text{mkid}\{\text{\$x:ut2}\}; e) = \text{mkid}\{\text{\$contending:ut2}\} \in \text{Id})) \\
& \quad \wedge (\text{es-initially}(es; \text{es-loc}(es; e); \text{mkid}\{\text{\$x:ut2}\}) = \text{mkid}\{\text{\$free:ut2}\} \in \text{Id}) \\
& \quad \wedge (\text{es-change-to}(es; \text{Id}; \text{mkid}\{\text{\$x:ut2}\}; e; \text{mkid}\{\text{\$try:ut2}\}) \\
& \quad \Rightarrow (((\text{es-when}(es; \text{mkid}\{\text{\$x:ut2}\}; e) = \text{mkid}\{\text{\$free:ut2}\} \in \text{Id}) \\
& \quad \vee (\text{es-when}(es; \text{mkid}\{\text{\$x:ut2}\}; e) = \text{mkid}\{\text{\$contending:ut2}\} \in \text{Id})) \\
& \quad \wedge \text{l.all}(L; \\
& \quad \quad \text{Id}; \\
& \quad \quad i.((\neg(i = \text{es-loc}(es; e) \in \text{Id})) \\
& \quad \quad \Rightarrow \text{es-sends-on}(es; e; \langle \text{es-loc}(es; e) \\
& \quad \quad \quad , i \\
& \quad \quad \quad , \text{mkid}\{\text{\$z:ut2}\} \rangle; \text{mkid}\{\text{\$wanted:ut2}\})))))) \\
& \quad \wedge (\text{es-change-to}(es; \text{Id}; \text{mkid}\{\text{\$x:ut2}\}; e; \text{mkid}\{\text{\$mine:ut2}\}) \\
& \quad \Rightarrow (\text{es-when}(es; \text{mkid}\{\text{\$x:ut2}\}; e) = \text{mkid}\{\text{\$try:ut2}\} \in \text{Id})) \\
& \quad \wedge (\text{es-change-to}(es; \text{Id}; \text{mkid}\{\text{\$x:ut2}\}; e; \text{mkid}\{\text{\$free:ut2}\}) \\
& \quad \iff (((\text{es-when}(es; \text{mkid}\{\text{\$x:ut2}\}; e) = \text{mkid}\{\text{\$taken:ut2}\} \in \text{Id}) \\
& \quad \quad \wedge ((\uparrow \text{es-isrcv}(es; e)) \\
& \quad \quad \quad c \wedge ((\text{es-tag}(es; e) = \text{mkid}\{\text{\$free:ut2}\} \in \text{Id}) \\
& \quad \quad \quad \wedge (\exists i: \text{Id} \\
& \quad \quad \quad \quad ((i \in L \in \text{Id}) \\
& \quad \quad \quad \quad \wedge (\neg(i = \text{es-loc}(es; e) \in \text{Id})) \\
& \quad \quad \quad \quad \wedge (\text{es-lnk}(es; e) \\
& \quad \quad \quad \quad = \\
& \quad \quad \quad \quad \langle i, \text{es-loc}(es; e), \text{mkid}\{\text{\$z:ut2}\} \rangle \\
& \quad \quad \quad \quad \in \text{IdLnk})))))) \\
& \quad \vee ((\text{es-when}(es; \text{mkid}\{\text{\$x:ut2}\}; e) = \text{mkid}\{\text{\$mine:ut2}\} \in \text{Id}) \\
& \quad \quad \wedge \text{l.all}(L; \\
& \quad \quad \quad \text{Id}; \\
& \quad \quad \quad i.((\neg(i = \text{es-loc}(es; e) \in \text{Id})) \\
& \quad \quad \quad \Rightarrow \text{es-sends-on}(es; e; \langle \text{es-loc}(es; e) \\
& \quad \quad \quad \quad , i \\
& \quad \quad \quad \quad , \text{mkid}\{\text{\$z:ut2}\} \rangle; \text{mkid}\{\text{\$free:ut2}\})))))) \\
& \quad \wedge (\text{es-change-to}(es; \text{Id}; \text{mkid}\{\text{\$x:ut2}\}; e; \text{mkid}\{\text{\$contending:ut2}\}) \\
& \quad \iff ((\text{es-when}(es; \text{mkid}\{\text{\$x:ut2}\}; e) = \text{mkid}\{\text{\$try:ut2}\} \in \text{Id}) \\
& \quad \quad \wedge ((\uparrow \text{es-isrcv}(es; e)) \\
& \quad \quad \quad c \wedge ((\text{es-tag}(es; e) = \text{mkid}\{\text{\$wanted:ut2}\} \in \text{Id}) \\
& \quad \quad \quad \wedge (\exists i: \text{Id} \\
& \quad \quad \quad \quad ((i \in L \in \text{Id})
\end{aligned}$$

$$\begin{aligned}
& \wedge (\neg(i = \text{es-loc}(es; e) \in \text{Id})) \\
& \wedge (\text{es-lnk}(es; e) \\
& = \\
& \quad \langle i, \text{es-loc}(es; e), \text{mkid}\{\$z:\text{ut}2\} \rangle \\
& \quad \in \text{IdLnk})))))) \\
\wedge (\text{es-change-to}(es;\text{Id};\text{mkid}\{\$x:\text{ut}2\};e;\text{mkid}\{\$taken:\text{ut}2\}) \\
\Rightarrow (((\text{es-when}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$contending:\text{ut}2\} \in \text{Id}) \\
\vee (\text{es-when}(es; \text{mkid}\{\$x:\text{ut}2\}; e) = \text{mkid}\{\$free:\text{ut}2\} \in \text{Id})) \\
\wedge ((\uparrow\text{es-isrcv}(es; e)) \\
c \wedge ((\text{es-tag}(es; e) = \text{mkid}\{\$wanted:\text{ut}2\} \in \text{Id}) \\
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= \\
\quad \langle i, \text{es-loc}(es; e), \text{mkid}\{\$z:\text{ut}2\} \rangle \\
\quad \in \text{IdLnk})))))) \\
\wedge ((\uparrow\text{es-isrcv}(es; e)) \\
\Rightarrow (\text{es-tag}(es; e) = \text{mkid}\{\$free:\text{ut}2\} \in \text{Id}) \\
\Rightarrow (\exists i:\text{Id} \\
((i \in L \in \text{Id}) \\
\wedge (\neg(i = \text{es-loc}(es; e) \in \text{Id})) \\
\wedge (\text{es-lnk}(es; e) = \langle i, \text{es-loc}(es; e), \text{mkid}\{\$z:\text{ut}2\} \rangle \in \text{IdLnk}))) \\
\Rightarrow (\text{subtype_rel}(\text{es-vartype}(es; \text{es-loc}(es; \text{es-sender}(es; e))); \text{mkid}\{\$x:\text{ut}2\}); \\
\text{Id}) \\
c \wedge (\text{es-change-to}(es;\text{Id};\text{mkid}\{\$x:\text{ut}2\};\text{es-sender}(es; e);\text{mkid}\{\$free:\text{ut}2\}) \\
\wedge (\text{es-when}(es; \text{mkid}\{\$x:\text{ut}2\}; \text{es-sender}(es; e)) \\
= \\
\quad \text{mkid}\{\$mine:\text{ut}2\} \\
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\wedge (\neg(i = \text{es-loc}(es; e) \in \text{Id})) \\
\wedge (\text{es-lnk}(es; e) = \langle i, \text{es-loc}(es; e), \text{mkid}\{\$z:\text{ut}2\} \rangle \in \text{IdLnk}))) \\
\Rightarrow (\text{subtype_rel}(\text{es-vartype}(es; \text{es-loc}(es; \text{es-sender}(es; e))); \text{mkid}\{\$x:\text{ut}2\}); \\
\text{Id}) \\
c \wedge \text{es-change-to}(es;\text{Id};\text{mkid}\{\$x:\text{ut}2\};\text{es-sender}(es; e);\text{mkid}\{\$try:\text{ut}2\}))))))
\end{aligned}$$